

STATEMENT
OF
THE ALLIANCE OF AUTOMOBILE MANUFACTURERS

BEFORE THE:
COMMITTEE ON SCIENCE

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PRESENTED BY:

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Mr. Chairman,

Thank you for the opportunity to testify before the Committee on Science regarding fuel efficient technologies for motor vehicles. I represent the Alliance of Automobile Manufacturers, a trade association of 9 car and light-truck manufacturers. Our member companies include BMW Group, DaimlerChrysler Corporation, Ford Motor Company, General Motors Corporation, Mazda, Mitsubishi, Porsche, Toyota Motor North America and Volkswagen of America.

Alliance member companies have more than 600,000 employees in the United States, with more than 230 manufacturing facilities in 35 states. Overall, a University of Michigan study found that the entire automobile industry creates more than 6.6 million direct and spin-off jobs in all 50 states and produces almost \$243 billion in payroll compensation annually.

The Alliance supports efforts to create an effective energy policy based on broad, market-oriented principles. Policies that promote research and development and accelerate the deployment of advanced technologies by providing customer-based incentives should set the foundation for these efforts. This focus on “accelerating the implementation of advanced technologies” leverages the intense competition of the automobile manufacturers worldwide. Competition drives automakers to develop and introduce breakthrough technologies as rapidly as possible to meet the demands and needs of consumers.

According to EPA data, the results of these efforts have been steady *fuel efficiency* increases of nearly 2 percent per year on average from 1975 to 2003 for both cars and light trucks. Fuel efficiency is a measure of the energy needed to move a given mass a specified distance. Fuel efficiency has been increased through improvements in aerodynamics, powertrains and reductions in accessory losses—in essence, through the use of the technologies of concern to the Committee and mentioned in reports by the National Academy of Sciences (NAS).

To accomplish these great results, the auto industry spending on R&D each year is approximately \$18.4 billion, with much of it in the high tech sector. In fact, the University of Michigan study noted earlier stated the following: “The level of automotive R&D spending and the relatively high employment of research scientists and engineers in the U.S. auto industry has traditionally earned a place in any U.S. government listing of high technology industries generally thought to be central to the long-term performance of the U.S. economy.”

The auto industry is committed to developing and utilizing “emerging” technologies to produce cleaner, safer, and more fuel efficient cars and light trucks. The NAS, in its 2001 report to Congress, “Effectiveness and Impact of Corporate Average Fuel Economy (CAFE) standards”, cited a number of promising technologies that are being developed for use in vehicles. The report notes that they fall into a variety of categories – from “production intent” to “emerging.” In many cases, the production intent technologies have already begun to be introduced into vehicles. The “emerging” technologies are ones that may achieve significant penetration into the market over 10 or more years, IF economic and regulatory conditions permit and at times ONLY IF engineering “breakthroughs” are achieved. All of this suggests to us that

pursuing a course of incentivizing the introduction of technologies to accelerate their implementation would be more effective than attempting to effectively mandate their use.

Auto manufacturers are also working on advanced longer-term technologies such as hybrid, clean diesel, and hydrogen powered vehicles, including fuel cells and internal combustion engines (ICE). These efforts may lead to substantial improvements in efficiency and emissions performance – all, we hope, without sacrificing safety, utility, and performance. Fuel cell technology, or liquid hydrogen powered vehicles using an ICE, also serve as a potential to move away from a petroleum dependent transportation sector. Successful introduction of these new and emerging technologies all share the need for cooperative efforts that bring all the key stakeholders together...including the automakers, energy providers, government policy makers and most importantly, the consumers.

The NAS summarized the diversity of demand and priorities in the marketplace when it stated that “automotive manufacturers must optimize the vehicle and its powertrain to meet the sometimes-conflicting demands of customer-desired performance, fuel economy goals, emissions standards, safety requirements and vehicle cost within the broad range of operating conditions under which the vehicle will be used.”

What this says is a fact that the auto industry must deal with every day in designing and producing vehicles -- the customer is in the driver's seat. This helps explain why, when fuel *efficiency* has been increasing by 2 percent per year, fuel *economy* (the miles per gallon a vehicle obtains) has not kept pace. Consumers are not placing as high a value on fuel economy as they are on other vehicle attributes (e.g., price and safety). Thus, while vehicles continue to get more fuel efficient, the miles per gallon obtained by a given vehicle or the vehicle fleet as a whole, has not increased as much because consumers are either choosing larger and heavier vehicles or choosing vehicle attributes such as larger engines and advanced safety equipment, that dampens the increase in fuel economy.

Market-based incentives ultimately will help consumers deal with the initial higher cost barriers of advanced technologies during early market introduction. The important consideration here is to increase demand, bringing more energy efficient vehicles into the marketplace. This will help drive cost reduction as economies of scale are achieved in a timelier fashion.

As a result, the Alliance supports enactment of consumer tax credits for the purchase of advanced technology vehicles. These credits will help offset the initial higher costs of advanced technology and alternative fuel vehicles until further technological advancements and greater volumes make them less expensive to produce and purchase. The Alliance believes that the overall concepts and provisions for consumer tax incentives found in last year's energy bill conference report are the right approach and would benefit American consumers.

Unfortunately, there have also been Congressional efforts in the past to consider amendments to the energy bill to increase CAFE standards. The Alliance has opposed these attempts to Congressionally set arbitrarily higher CAFE levels. The original CAFE program was designed to allow the Department of Transportation to set new standards by conducting

rulemakings that consider the “maximum feasible fuel economy level” that is achievable for a given model year.

Two years ago, the National Highway Traffic Safety Administration (NHTSA) used this authority to set higher standards for the 2005-07 model year light trucks. The NHTSA rule increased the standards by 1.5 mpg over that period – to 22.2 mpg by 2007 -- the largest increase in 20 years. NHTSA set these standards after considering key elements such as technological feasibility, cost, safety, emissions controls, consumer choice, the need of the nation to conserve energy, and the effect on American jobs. While the standard for 2007 may not be viewed by some as sufficiently “aggressive”, NHTSA stated in the preamble to the final rule that it will pose a “substantial challenge” to at least one of our member companies.

In its rulemaking, NHTSA noted that advanced fuel saving technologies, such as hybrid electrics and advanced clean diesels, could substantially enhance the average fuel economy of the American light vehicle fleet as even more advanced technologies, such as fuel cells, are being developed.

Where CAFE levels are set is critical to automakers for a variety of reasons. First, there are competitive implications for some manufacturers, relative to others, due solely to the mix of vehicles that are offered and sold. The current system emphasizes these disparate impacts by more severely challenging manufacturers that already provide vehicles in the heavier and larger segments of the vehicle fleet, such as full-size SUVs and pick-up trucks. While there are approaches to restructuring the CAFE program that can help address these concerns, the details of implementing them are critical and must be fully explored to avoid creating a system with new competitive consequences. The Administration is currently examining a number of CAFE restructuring proposals through rulemaking and the Alliance and its Member companies are actively involved in the process.

Second, the level of CAFE standards can result in unintended consequences, such as the adverse safety consequences of pushing manufacturers to make vehicles lighter and smaller. The NAS report noted the increased fatalities that are attributable to the impacts of downweighting and downsizing due to past CAFE standards and urged care in setting future levels to avoid aggravating this effect. The report said, “If an increase in fuel economy is effected by a system that encourages either downweighting or the production and sale of more small cars, some additional traffic fatalities would be expected. For fuel economy regulations not to have an adverse impact on safety, they must be implemented using increased fuel efficiency technology.”

Third, the emphasis of customers on improving the safety of the vehicles they purchase results in automakers adding more equipment to provide safety in collisions. Safety improvements continuously add weight to vehicles, and the heavier the vehicle, the more energy it takes to move it down the road, resulting in a decrease in fuel economy. This is a classic dilemma and reflects the tradeoffs that automakers face constantly in designing vehicles to achieve improvements in safety, fuel efficiency and emission performance.

Finally, for consumers sensitive to cost, fuel economy gains must be compared to the increased investment costs and risks in their new vehicle purchase decision. Assuming a fuel cost of \$2 per gallon, a 20 percent increase in vehicle fuel efficiency offers an annual fuel savings of under \$150. This cost must be weighed against the convenience, utility and performance of the alternative. As automakers, we are keenly aware of the importance of consumer choices and the challenges we have to deliver new technologies that meet their affordability, performance and utility needs.

So where is the industry headed:

Fuel Cell Vehicles

A promising long-term technology offers breakthrough fuel economy improvements, zero emissions and a shift away from petroleum-based fuels. From a vehicle perspective, hydrogen-fueled fuel cells offer the biggest improvement in efficiency and emissions but at high cost and with major infrastructure challenges. Onboard hydrogen storage also presents some difficulty. The gasoline infrastructure is well established, but gasoline reformers are the least developed and the most costly of reformer technology.

A robust fuel cell commercialization plan incorporates breakthroughs and complementary research in stationary power units. A primary challenge in the introduction of fuel cells into America's light vehicle passenger and truck fleets are the packaging restrictions of size and weight.

Hybrid-Electric Vehicles

Hybrid-electric vehicles offer significant improvements in fuel economy and in tailpipe emissions. These products capture power through regenerative braking. When decelerating an internal combustion vehicle, the brakes convert the vehicle's kinetic energy into heat, which is lost to the air. By contrast, a decelerating hybrid vehicle can convert kinetic energy into stored energy that can be reused during the next acceleration. Hybrid vehicles do not require additional investment in fuel infrastructure which helps reflect their potential for near term acceptance.

Advanced Lean Burn Technology Vehicles

Vehicles that are powered by advanced lean burn technology such as clean, direct injection diesels offer greater fuel economy and better performance. The auto industry is working now to introduce technologies that will allow diesel automobiles to meet the EPA's Tier 2 emissions regulations. These types of vehicles, widespread in Europe *today*, could provide fuel economy gains in excess of 25 percent above comparable conventional vehicles.

Internal Combustion Engine powered by liquid hydrogen

Another promising and enabling technology towards a hydrogen economy are hydrogen-powered ICEs. The concept of using hydrogen in internal combustion engines offers several

advantages: near zero emissions, maintaining the utility, flexibility, and driving dynamic of today's automobile and helping to promote a hydrogen fueling infrastructure.

Battery Electric Vehicles

Vehicles that utilize stored energy from "plug-in" rechargeable batteries offer zero emissions from the vehicle. However, battery electric vehicles continue to face weight, energy density, and cost challenges that limit their customer range and affordability.

Beyond gasoline, the auto industry is working with a variety of suppliers of alternative fuels. In fact, the industry already offers more than 25 vehicles powered by alternative fuels. Approximately 3 million of these vehicles are on the road today and more are coming. Today, we find vehicles that use:

- Natural gas, which reduces carbon monoxide emissions;
- Ethanol, a renewable fuel domestically produced with the longer term potential to substantially reduce greenhouse gases;
- Liquefied petroleum gas (propane), the most prevalent of the alternative fuels, which reduces VOC emissions; and
- For the future, liquid hydrogen, which has the potential to emit nearly zero pollutants depending on feedstock.

One of the key hurdles to overcome in commercializing alternative fuel vehicles is the lack of fueling infrastructure. For nearly a century, infrastructure has focused primarily on gasoline and diesel products. Infrastructure and fuel incentives will help the distributors overcome the costs to establish the alternative fuel outlets and support distributors during initial lower sales volumes as the number of alternative fuel vehicles increases.

As you can tell, the automobile companies are constantly competing for the next breakthrough innovations. All manufacturers have advanced technology programs to improve vehicle fuel efficiency, lower emissions and increase motor vehicle safety. These are not "pie in the sky" concepts on a drawing board. In fact, many companies have advanced technology vehicles in the marketplace right now or have announced production plans for the near future. That is why now is the perfect time for the enactment of consumer tax credits to help spur the purchase of these new vehicles which years of research and development have made possible.

Thank you.

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